

BlackBerry Enterprise Server v3.5 for Microsoft Exchange Server deployment guide



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Abstract

This paper is intended to clarify and highlight some of the steps necessary to install BlackBerry Enterprise Server v 3.5 for Microsoft® Exchange Server 2000. Some of the data is specific to HP ProLiant servers and is based on performance testing already completed. This paper will assist in guiding you through the decision-making process before installing this solution in your environment. For detailed step-by-step instructions, see the Research In Motion document “Installation and Getting Started Guide” included with the installation media.

Note that performance-specific data is outlined in the ActiveAnswers paper entitled “BlackBerry Enterprise Server v3.5 for Exchange Performance Brief”.

Executive summary

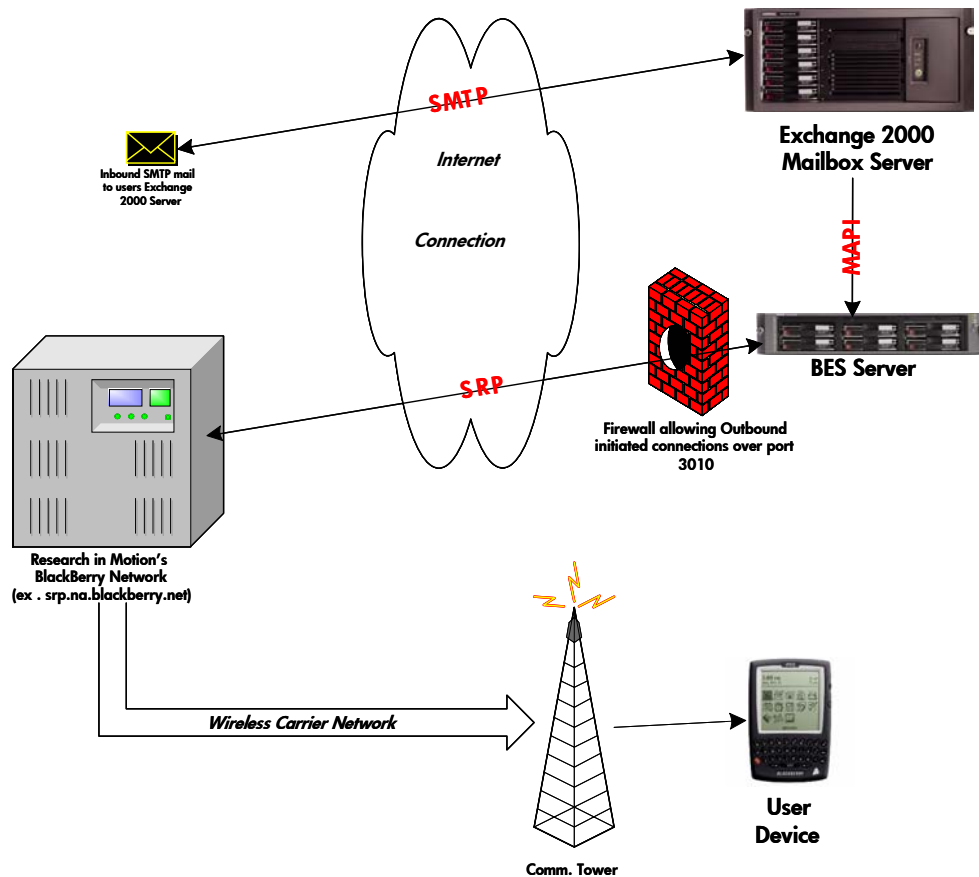
Research In Motion’s (RIM) BlackBerry Enterprise Server for Exchange is a key component in HP’s wireless messaging strategy. BlackBerry Enterprise Server and HP ProLiant hardware make an excellent team in providing this important application. This guide is intended to compliment RIM’s installation guide and will highlight important steps in the configuration of an infrastructure so installation of the solution can proceed smoothly.

BlackBerry Enterprise Server functional overview

BlackBerry is a mobile email and data solution that consists of a handheld device, cradle, and desktop software, as well as server software and a cellular radio network connection. The BlackBerry Enterprise Server centralizes email redirection for handheld users in an organization. The server software performs the following functions for each user:

- **Monitors** the user’s mailbox for new mail
- **Applies filters** (defined by the user or the administrator) to new messages, controlling how the BlackBerry service relays the message to the user’s handheld
- **Compresses and encrypts** new messages and delivers them to the handheld over the Internet
- **Receives**, over the Internet, messages that are composed on the handheld, and then decrypts and decompresses the messages and places them in the user’s Outbox for the corporate Microsoft Exchange Server to deliver

Figure 1. Overview of BlackBerry Enterprise Server solution



The BlackBerry Enterprise Server runs as a Windows NT®/2000 service and can monitor many users at once over a single administrative connection to the Microsoft Exchange Server.

The current BlackBerry infrastructure provides secure email transport between an organization's network and the BlackBerry Wireless Handheld using Triple Data Encryption Standard (DES) encryption technology. This means that email delivered to handhelds is just as secure as messages delivered to a personal computer on an organization's network.

Attachment service

When the Attachment Service is installed alongside BlackBerry Enterprise Server, the BlackBerry Enterprise Server can deliver email attachment content to any BlackBerry handheld. The Triple DES encryption used by the BlackBerry Enterprise Server is also applied to the attachment content.

Using the Attachment Service application, attachments with the following file name extensions can be opened: .doc, .xls, .ppt, .pdf, .wpd, and .txt. The file formats are converted to the Universal Content Stream (UCS), a Research In Motion Limited (RIM) proprietary format, by the Attachment Service and are delivered as email attachments to the handheld. Content is generated by the Attachment Service and received by the handheld based on requests by the handheld user for a Table of Contents or Full Content.

Mobile data service

The Mobile Data Service manages and translates information so that it can pass between the user's corporate intranet and the BlackBerry handheld more efficiently.

Direct flow between the handheld application and a network server does not occur; all information must pass through the Mobile Data Service first. As the intermediary agent, the Mobile Data Service can perform two functions:

- **Data conversion:** As a proxy, Mobile Data Service intercepts information that passes between handheld applications and the content server. Data conversion may be necessary if the content returned from the server is not formatted appropriately.
- **Data routing:** As a channel, Mobile Data Service passes information back and forth between the handheld application and the content server. The content that is sent by the application and the content that is sent by the server are not altered before being passed on to its destinations.

After installing the Mobile Data Service, it must be enabled at the server and user level before it can be used on the handheld.

Minimum software requirements

Microsoft Exchange Server 2000 (Service Pack 1 or later) mail server environment (recommended installation on a separate computer to the BlackBerry Enterprise Server service). Before installing BlackBerry Enterprise Server, install the CDO.dll hotfix from Microsoft Product Support Services Knowledge Base article Q314606.

Active Directory Service Interfaces (ADSI) 2.5: This software can be downloaded from <http://www.microsoft.com/ntserver/nts/downloads/other/ADSI25/default.asp>

A database tool (**MSDE, SQL 7.0, or SQL 2000**) must be installed before the BlackBerry Enterprise Server Management can be used. The Open Database Connectivity software must also be installed on the Mobile Data Service computer for Mobile Data Service 1.0 to function. ODBC is installed with SQL Server (7.0 or 2000) or MSDE; if a database tool will not be installed (which is required for the BlackBerry Enterprise Server Management database); download **Microsoft Data Access Components (MDAC) 2.6 or later** from <http://www.microsoft.com/data/download.htm>

The BlackBerry Enterprise Server must be able to send HTTP requests through TCP/IP Port 3101 for browsers on Mobile Data Service-enabled devices to function properly

Java Runtime Environment (JRE) 1.4: The software can be downloaded from <http://java.sun.com/j2se/1.4.2/download.html>, and this version of JRE has Java Secure Socket Extension (JSSE) embedded. This software is provided on the BlackBerry Enterprise Server CD in *drive:\tools*. Launch **j2re-1_4_1_02-windows-i586-i.exe** and complete the installation.

Server configurations

Based on the test results generated, any server in the HP ProLiant server line would work well as a BlackBerry Enterprise Server. The function of the server will become a critical point of traffic after the rollout of the solution and therefore redundancy should be built into the hardware platform. Fault tolerance in power supplies, hard disk subsystems, and network links should be given consideration when planning a rollout.

If running the database locally, the disk space requirements (while not necessarily I/O) may increase depending on the level of logging and application use. The recommended database configuration is one database for each organization, since using multiple databases introduces the risk of having a BlackBerry Enterprise Server on more than one database with a different IT Policy applied in each case. Other services provided by the solution (Mobile Data Service, and BlackBerry Attachment Server) were not specifically tested here; although the configuration outlined will handle the additional load imposed by those applications as well.

Typically, two drives configured in a RAID1 set (mirrored) for the OS and page file, and two additional drives similarly configured, for the application, database, and logs are recommended.

Note: Microsoft Outlook should **not** be installed on the same computer as the BlackBerry Enterprise Server. If Microsoft Outlook is present on the BlackBerry Enterprise Server computer, wireless calendar synchronization will not work because Microsoft Outlook's versions of CDO and MAPI DLLs do not support wireless calendar synchronization. If Microsoft Outlook is opened on a BlackBerry Enterprise Server, it will attempt to overwrite the MAPI system. Thus, Microsoft Outlook on a BlackBerry Enterprise Server is an unsupported configuration.

Firewall configuration

The BlackBerry Enterprise Server initiates outbound, bidirectional connections to the wireless network. To support BlackBerry users in an environment with a firewall in place, the server must be configured to enable the computers running the BlackBerry Enterprise Server within the company to initiate TCP/IP connections to an outside server listening on port 3101. This is depicted in Figure 2. If a proxying firewall is in place, the proxy must be transparent.

When configuring the firewall to enable the connection to the SRP host, RIM recommends that the connection to a specific IP address is not limited, because RIM might add to the SRP host additional IP addresses that provide additional redundancy or fail-over protection.

Figure 2. BlackBerry Enterprise Server behind a corporate firewall

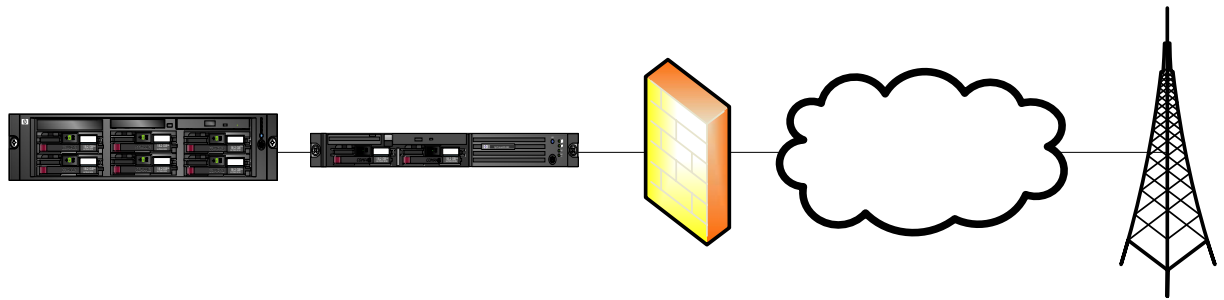


Figure 3. BlackBerry Enterprise Server in a DMZ configuration

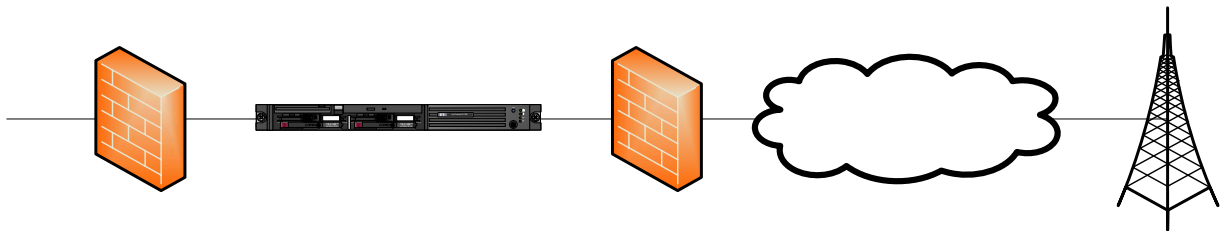


Figure 4. BlackBerry Enterprise Server behind a proxy server



Note: A transparent proxy does NOT modify requests or responses through the proxy during proxy authentication and identification, whereas a non-transparent proxy (where the client specifies the hostname and port number of the proxy) is used to modify requests or responses through the proxy. If the user has a non-transparent proxy, the BlackBerry Enterprise Server can be configured to access an internal proxy address that is then translated externally to the SRP Host on port 3101. Several proxy servers enable this configuration (for example, Microsoft ISA server and Microsoft Proxy Server). Each server requires the installation of an agent on the client (the BlackBerry Enterprise Server) that gives the appearance of a direct connection.

The BlackBerry Enterprise Server requires a MAPI connection to each Microsoft Exchange Server that hosts mailboxes for BlackBerry users, so the DMZ method (see Figure 3) requires extensive configuration changes. For example, the firewall and each Microsoft Exchange Server must be configured. Because the BlackBerry Enterprise Server connects to each mailbox server using MAPI, the configuration is identical to the configuration that enables Microsoft Outlook users to connect to their Microsoft Exchange Servers through the firewall. The following changes must be completed for the DMZ method:

Microsoft Exchange Server

- Configure the Microsoft Exchange Server so that it uses static ports.

Firewall

- Open static ports to enable the BlackBerry Enterprise Server to connect through the firewall to each Microsoft Exchange Server on the static ports.
- Open the network authentication ports (such as Kerberos) to enable the BlackBerry Enterprise Server to authenticate to a domain controller.
- If the transparent proxy method is used, it is necessary to open only one TCP connection. If the non-transparent proxy connection method is used, multiple ports must be opened, both TCP and User Datagram Protocol (UDP).
- If the non-transparent proxy method is used, the proximity of the BlackBerry Enterprise Server to the mail servers to which it is connecting might affect the stability of the BlackBerry Enterprise Server. MAPI is not a TCP application and performs better with a direct connection to the destination host.

Note: BlackBerry Enterprise Servers do not require a connection to a Global Catalog Server for remote address lookups.

When installing the BlackBerry Enterprise Server for Microsoft Exchange, RIM recommends placing the server inside the corporate firewall, as close as possible to the mail server that it services (for example, on the same switch). Placing the BlackBerry Enterprise Server outside the firewall reduces the overall security of the demilitarized zone (DMZ). If strict corporate

policy prohibits direct communication between internal servers and Internet hosts, two alternative methods are available: using a proxy server or a Port Address Translation (PAT). RIM supports both alternative configurations.

Pre-installation procedures

The following procedures are required before installing BlackBerry Enterprise Server software.

- Defining a service account and mailbox in Microsoft Exchange Server 2000
- Setting permissions on service accounts for BlackBerry Enterprise Server, BlackBerry Enterprise Server Management, and BlackBerry User Administration
- Installing and registering CDO.dll
- Creating a MAPI profile
- Installing database software

Account creation

A user service account and mailbox must be defined for each BlackBerry Enterprise Server software component installed (BlackBerry Enterprise Server, BlackBerry Enterprise Server Management, and BlackBerry User Administration). The same service account can be used for multiple tools on the same computer. The account should be a member of the Administrators and Domain Users groups.

Server Service account

This account will run the services on the BlackBerry Enterprise Server. This is the account that will handle the processing of messages.

It will require the following permissions in order to function correctly:

- **Log on locally with local permissions:** (This is optional, but useful for troubleshooting – if preferred, this can be removed after installation). This permission should be set by default.
- **Log on as a service:** This permission should be set automatically when installing BlackBerry Enterprise Server. Verify that it is set.
- **Local administrator** permissions on the BlackBerry Enterprise Server service computer
- **Microsoft Exchange View Only Administrator** (minimum) access at the Administrative Groups level in Microsoft Exchange 2000 to be able to read from the Active Directory.
- Microsoft Exchange **Administer Information store**, **Send as**, and **Receive as**, set at the Mailbox store level or the Microsoft Exchange server level (to write information to the administration service account mailbox)

Server management account

This management account will be used during the administration of BlackBerry Enterprise Server services as well as installation of new server instances.

This account requires the following permissions:

- **Log on locally with local permissions:** (This is optional, but useful for troubleshooting – if preferred this can be removed after installation). This permission should be set by default
- **Log on as a service:** This permission should be set automatically when installing BlackBerry Enterprise Server. Verify that it is set
- **Local administrator** permissions on the BlackBerry Enterprise Server service computer and the BlackBerry Enterprise Server Management computer (these can be the same computer)
- **Microsoft Exchange View Only Administrator** (minimum) access at the Administrative Groups level in Microsoft Exchange 2000 to be able to read from the Active Directory
- **Microsoft Exchange Administer Information store,** set at the Mailbox store level or the Microsoft Exchange server level (to write information to the administration service account mailbox)

User administration account

A BlackBerry User Administration service account requires the following Windows 2000 and Microsoft Exchange 2000 permissions:

- **Log on as a service:** This permission should be set automatically when installing BlackBerry Enterprise Server on the same computer as BlackBerry User Administration. Verify that it is set
- **Local administrator** permissions on the BlackBerry Enterprise Server service computer and the BlackBerry Enterprise Server Management computer (these can be the same computer)
- **Microsoft Exchange View Only Administrator** (minimum) access at the Administrative Groups level in Microsoft Exchange 2000 to be able to read from the Active Directory
- **Receive as** permissions within the Microsoft Exchange routing group

Preparing to create a MAPI profile

A MAPI profile must be created for the BlackBerry Enterprise Server service account and the BlackBerry Enterprise Server Management service account (which can be the same account). Two separate MAPI profiles can be created for this or one MAPI profile can be used for both purposes. The MAPI profile(s) will point to the same BlackBerry Enterprise Server administration mailbox.

The following procedure verifies that the MAPI profile(s) will be created during the installation of BlackBerry Enterprise Server and BlackBerry Enterprise Server Management.

1. Verify that the MAPI subsystem is initialized by first opening either Microsoft Exchange 5.5 Administrator or Microsoft Exchange 2000 System Manager.
2. Locate the Tools folder on the BlackBerry Enterprise Server Software CD.
3. Open the Tools folder and double-click the fixmapisvc.exe utility.

A DOS screen will appear briefly onscreen. The mapisvc.inf file is automatically installed under C:\winnt\system32.

Installing database software

One of the following database tools must be installed if hosting the BlackBerry Enterprise Server Management database on the BlackBerry Enterprise Server: MSDE, SQL 7.0, or SQL 2000.

If no copy of SQL 7.0 or SQL 2000 is available, a copy of MSDE can be installed from the Microsoft Office 2000 developer CD-ROM.

Note: If it is desirable to have MSDE installed to a drive other than C:\, then it will be necessary to modify the MSDEInst.iss file. Open MSDEInst.iss and search for and change the following lines to the desired location: szDir=C:\MSSQL7 szDataDir=C:\MSSQL7

Installing the BlackBerry Enterprise Server software

Log on to the BlackBerry Enterprise Server target computer as the BlackBerry Enterprise Server service account. Run the provided setup program to start the BlackBerry Enterprise Server installation program.

Given the hardware recommendation in earlier sections, the application would be installed onto the second array.

From this point forward, refer to the documentation provided by Research In Motion to configure the server and verify connection to the wireless network.

Tech Tip:

To start and stop BlackBerry Enterprise Server services from the command prompt:

1. Log on to the computer where the BlackBerry Enterprise Server service is installed.
2. Open a command prompt and type net start "blackberry server (BlackBerry Enterprise Server name)".

To stop the BlackBerry Enterprise Server version 3.5 and later from a command prompt:

1. Log on to the computer where the BlackBerry Enterprise Server service is installed.
2. Open a command prompt and type net stop "blackberry server (BlackBerry Enterprise Server name)".

References

To learn more about HP Messaging solutions, contact a local HP sales representative or visit the HP website at:

<http://www.hp.com/hps/sol/messaging>.

For more information on HP ProLiant servers, please visit:

<http://welcome.hp.com/country/us/en/prodserv/servers.html>

To learn about the Microsoft servers mentioned in this paper go to

<http://www.microsoft.com/servers>.

For more information on the complete BlackBerry Enterprise Server for Exchange solution go to <http://www.blackberry.com/products/software/server/exchange/index.shtml>

For information on the MMB2 Workload for Loadsim and additional information about Microsoft Exchange solutions go to <http://www.hp.com/solutions/activeanswers/exchange>

For performance related results of the BlackBerry Enterprise Server solution, refer to a whitepaper titled "BlackBerry Enterprise Server v3.5 for Microsoft Exchange Performance Brief", on ActiveAnswers <http://www.hp.com/solutions/activeanswers/>

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